



DAC JFW

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: 808.0002

Earl F. CRANDALL

Appln. No.: 10/817,057

Group Art Unit: 2875

Confirmation No.: 2666

Examiner: Julie Ann SHALLENBERGER

Filed: April 2, 2004

For: FLUORESCENT LAMP SYSTEM USING REFLECTORS

**PETITION UNDER 37 CFR § 1.181 TO WITHDRAW A HOLDING
OF ABANDONMENT**

MAIL STOP PETITIONS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

The undersigned, on behalf of Applicant, petitions the Commissioner requesting withdrawal of the holding of abandonment of the above identified application. The application was abandoned for allegedly failing to file a proper reply to the Office letter mailed on November 1, 2005. However, a proper response, albeit bearing an incorrect serial number, was in fact timely filed on May 1, 2006.

Submitted herewith are copies of the following documents:

1. Non-Final Office Action dated November 1, 2006, mailed by the PTO;
2. Stamped postcard receipt indicating an Amendment, 1 sheet of Drawings; Petition of Extension of Time; and a check for \$510.00 were filed in the PTO on May 1, 2006;
3. The Amendment referenced in 2 above;
4. The 1 sheet of drawings (FIG. 1A) referenced in 2 above;
5. The Petition for Extension of Time referenced in 2 above;
6. The Check referenced in 2 above; and
7. Notice of Abandonment.

BEST AVAILABLE COPY

PETITION UNDER 37 CFR §1.181
SER. NO. 10/817,057

Remarks

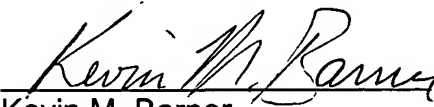
From documents 2-6 it is clear that this firm, representing Applicant, filed a timely response to the Office Action (document 1). It is recognized that that the Amendment and affiliated papers were filed on May 1, 2006, with the incorrect serial number attached thereto. However, on or about May 4, 2006, Applicant's representative, Mr. Kevin M. Barner, received a telephone call from a representative (Ms. Margaret Stevens) of the PTO's Office of Initial Patent Examination (OIPE). The OIPE representative indicated that the above Amendment had been filed on May 1, 2006, but that the serial number attached thereto did not match up with the indicated inventor.

It was then that Mr. Barner realized that the serial number provided on the Amendment and related papers was incorrect. The correct serial number, i.e., 10/817,057, was then provided to the OIPE representative who indicated that she would "take care of it." Unfortunately, however, on May 30, 2006, the above-captioned case went abandoned for failure to respond to the Office Action.

Thus, it is respectfully submitted that the abandonment of the instant application was due to, (1) a typographic error in the serial number provided on a timely filed Amendment and its affiliated papers, and (2) after being informed of the correct serial number, failure of a representative of the OIPE to match up the timely filed Amendment with the correct application file.

Accordingly, it is respectfully requested that the Commissioner withdraw the holding of abandonment.

Respectfully submitted,


Kevin M. Barner
Registration No. 46,075

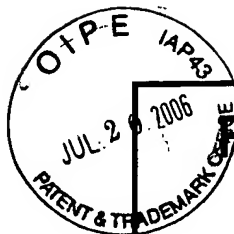
CAHN & SAMUELS, LLP
Telephone: (202) 331-8777
Facsimile: (202) 331-3838

WASHINGTON OFFICE

25534

CUSTOMER NUMBER

Date: July 20, 2006



FREE TRANSMITTAL for FY 2006 <small>Effective 10/01/2004. Patent fees are subject to annual revision.</small>		Complete if Known	
		Application Number	10/817,057
<input checked="" type="checkbox"/> Applicant Claims small entity status. See 37 CFR 1.27		Filing Date	April 2, 2004
		First Named Inventor	Earl Crandall
		Examiner Name	Julie A. Shallenberger
TOTAL AMOUNT OF PAYMENT		Art Unit	2875
(\$) 400.00		Attorney Docket No.	808.0002

METHOD OF PAYMENT (check all that apply)		FEE CALCULATION (continued)																																																																																																																																																																																																	
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1. BASIC FILING FEE		<table border="1"><thead><tr><th colspan="2">Large Entity</th><th colspan="2">Small Entity</th><th rowspan="2">Fee Description</th><th rowspan="2">Fee Paid</th></tr><tr><th>Fee Code</th><th>Fee (\$)</th><th>Fee Code</th><th>Fee (\$)</th></tr></thead><tbody><tr><td>1001</td><td>790</td><td>2001</td><td>395</td><td>Utility filing fee</td><td></td></tr><tr><td>1002</td><td>350</td><td>2002</td><td>175</td><td>Design filing fee</td><td></td></tr><tr><td>1003</td><td>550</td><td>2003</td><td>275</td><td>Plant filing fee</td><td></td></tr><tr><td>1004</td><td>790</td><td>2004</td><td>395</td><td>Reissue filing fee</td><td></td></tr><tr><td>1005</td><td>160</td><td>2005</td><td>80</td><td>Provisional filing fee</td><td></td></tr><tr><td colspan="2">SUBTOTAL (1)</td><td colspan="2">(\$)</td><td colspan="2"></td></tr></tbody></table>				Large Entity		Small Entity		Fee Description	Fee Paid	Fee Code	Fee (\$)	Fee Code	Fee (\$)	1001	790	2001	395	Utility filing fee		1002	350	2002	175	Design filing fee		1003	550	2003	275	Plant filing fee		1004	790	2004	395	Reissue filing fee		1005	160	2005	80	Provisional filing fee		SUBTOTAL (1)		(\$)																																																																																																																																																			
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SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	George A. Metzenthin	Registration No. (Attorney/Agent)	41,995
Signature	<i>George A. Metzenthin</i>	Telephone	(202) 331-8777
		Date	July 20, 2006

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

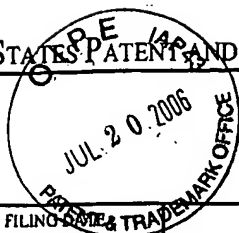
This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,057	04/02/2004	Earl F. Crandall	033859-009	2666

21839 7590 11/01/2005

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(INCLUDING BURNS, DOANE, SWECKER & MATHIS)
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ALEXANDRIA, VA 22313-1404

EXAMINER

SHALLENBERGER, JULIE ANN

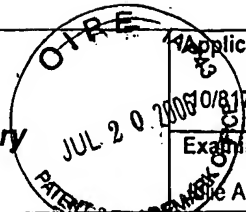
ART UNIT PAPER NUMBER

2875

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary



Application No.

10/8/17,057

Examiner

Eric A. Shallenberger

Applicant(s)

CRANDALL, EARL F.

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/2/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawing Objections

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the side view with the mirrors, bulbs and pipes must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The applicant needs to submit drawings that show side views of the claimed invention in order to better illustrate the arrangement to the elements in the claimed invention.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 12 is objected to because of the following informalities: The word "form" should be --from--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Greif (5,743,628). Greif teaches a gas discharge lamp with a plurality of gas discharge bulbs 7,8,9,10 arranged around a perimeter defining a middle region with a reflective mirror 24 in the middle region as shown in figures 2a and 2b. The bulbs 7,8,9, and 10 are arranged in a circular perimeter as claimed in 2 and the reflective mirror 24 is circular as claimed in 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greif in view of Tickner (5,377,086).

Greif teaches all the elements of independent claim 1, but lacks the teaching of the U-shaped bulbs as in claim 3. Tickner teaches the use of U-shaped bulbs. It would have been obvious to one of ordinary skill at the time of the invention to combine Greif's discharge lamp with the U-shaped bulbs of Tickner's lamp in order to provide more light.

Claims 5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grief in view of Wordin (6,170,962).

Greif lacks the specific teaching of parabolic and hyperbolic shaped mirrors. Wordin teaches a florescent light source with parabolic mirrors to produce direct light straight downward in column 2 lines 17-25. Wordin also teaches the pairing of two hyperbolic mirrors 103 and 104 as shown in figure 2. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the discharge lamp taught by Grief and modify the reflectors as taught by Wordin in order to produce an intended direction of light.

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Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grief in view of Wordin (6,170,962) and further in view of Tickner.

Grief teaches the gas discharge lamp and Wordin teaches the pairing of hyperbolic mirrors, but their combined teachings lack the use of U-shaped bulbs. Tickner teaches the use of U-shaped bulbs. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the discharge lamp taught by Grief with the reflectors taught by Wordin in order to produce an intended direction of light and use U-shaped bulbs taught by Tickner in order to produce more light.

Claims 10,11,13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davenport (5,675,677) in view of Brown (2003/0067790). Davenport teaches a gas discharge bulb 118 on a base with light pipes 140a-140c positioned in the middle to redirect light outward, but lacks the teaching of multiple discharge lamps arranged around a circular perimeter of the base as claimed in 14. Brown teaches multiple lamps 14 positioned around a base with a middle region containing a light pipe 24 of smaller bundle fibers as claimed in 11. Davenport also teaches the use of a metal coating 116 in column 3 lines 30-50. It would be obvious to one of ordinary skill in the art at the time of the invention to combine Browns arrangement of bulbs around the circular perimeter with Davenport's gas discharge lamp and light pipes in order to maximize the amount of light emitted from the lamp.

Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davenport in view of Brown and further in view of Tickner.

Davenport and Brown teach all the elements claimed in independent claim 10, but lack the teaching of U-shaped bulbs. Tickner teaches U-shaped lamps 45 and it would be obvious to one of ordinary skill in the art at the time of the invention to use the lamps of Tickner in the device of Davenport in order to maximize the amount of light emitted.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McDermott (5,782,553) teaches the use of parabolic and hyperbolic reflectors in a multiple lamp lighting device. Zou (6,186,649) teaches the use of metal coating 106 and light pipes. Nishio (2002/0167264) teaches the use of U-shaped bulbs and a reflector in the middle region. Schroeder (6,318,907) teaches a discharge lamp and a plurality of fiber optic cables bundled together to maximize the emitted light.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie A. Shallenberger whose telephone number is (571)272-7131. The examiner can normally be reached on Monday - Friday 830-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on 571-272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Julie Shallenberger
Examiner AU 2875


RENEE LUEBKE
PRIMARY EXAMINER



FLUORESCENT LAMP SYSTEM USING REFLECTORS

RELATED APPLICATIONS

[0001] This application claims priority under 37 C.F.R. § 119 to provisional application Serial Nos. 60/460,379 and 60/463,286, filed on April 4, 2003 and April 16, 2003, respectively, both entitled "Fluorescent Lamp Systems Using Reflectors," both of which are incorporated by reference herein in their entirety.

BACKGROUND

[0002] The present invention relates generally to fluorescent lamps. More specifically, this invention relates to fluorescent lamps using reflectors. Additionally, this invention relates to compact fluorescent lamps using reflectors in several configurations.

SUMMARY

[0003] In one aspect, a gas discharge lamp includes a plurality of gas discharge bulbs arranged on a base along a perimeter defining a middle region and at least one reflective mirror positioned in the middle region and operative to reflect light outward from the middle region.

[0004] Alternatively, at least one light pipe can be positioned in the middle region and configured to gather light and redirect the light outward from the middle region.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Objects and advantages of the present invention will become apparent to those skilled in the art upon reading this description in conjunction with the accompanying drawings, in which like reference numerals have been used to designate like elements, and in which:

[0006] Fig. 1 is a pictorial representation of a top view of a circular arrangement of U-shape bulbs with a circular mirrored reflector according to an embodiment of the present invention.

[0007] Fig. 2A is a pictorial representation of a top view of a circular arrangement of U-shape bulbs with hyperbolic mirrored reflectors according to an embodiment of the present invention.

[0008] Fig. 2B is a pictorial representation of a top view of a circular arrangement of U-shape bulbs with parabolic mirrored reflectors according to an embodiment of the present invention.

[0009] Fig. 3 is a pictorial representation of a top view of a circular arrangement of bulbs with parabolic mirrored reflectors according to an embodiment of the present invention.

[0010] Fig. 4 is a pictorial representation of a top view of a circular arrangement of U-shape bulbs with light pipes according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0011] Fluorescent light operates by creating a discharge or arc across an ionized gas within a glass tube. The traditional fluorescent—or gas discharge-lamp comprises a tube containing an inert gas and a material such as mercury vapor which, when ionized, can collide with electrons of a current flow across the electrodes of a lamp, and emit photons. These photons strike fluorescent material on the inner wall of the glass tube and produce visible light.

[0012] A problem with lamps is the efficiency of the light generation. The present invention contemplates using mirrored reflectors in between an arrangement of lamps to generate more light from smaller wattage lamps.

[0013] Fig. 1 is of a top view of a circular arrangement of U-shape bulbs 10 with a circular mirrored reflector 30 according to an embodiment of the present invention. In this embodiment, the U-shaped bulbs 10 may be compact florescent bulbs or any other type of lamp designed in a compact configuration. A circle of U shaped tubes or a spiral lamp design may be used in accordance with the invention. According to a particular embodiment, U-shaped bulbs 10 are in a curricular arrangement on a base 30 with a circular reflective mirror 30 in the middle. This arrangement allows a maximum amount of light to be reflected from the interior to the outside.

[0014] The arrangement of the bulbs need not be circular, but can be along any perimeter that defines a middle region for placing a reflective material. The bulbs need not be U-shaped, but can be any shape.

[0015] The circular mirror 30 may be replaced with a mirror or any shape which efficiently reflects light from the U-shaped bulbs 10 outward. The U-shaped bulbs 10 may be arranged in any geometric shape capable of surrounding an inner mirrored reflector. Figure 1 shows three U-shaped bulbs, however any number of bulbs greater than one may be used according to the invention.

[0016] Fig. 2A is a pictorial representation of a top view of a circular arrangement of U-shape bulbs 110 with a series of hyperbolic mirrored reflectors 150 according to an embodiment of the present invention. In this exemplary embodiment, the U-shaped bulbs 110 may be compact florescent bulbs or any other type of lamp designed in a compact configuration. In this embodiment, the U-shaped bulbs 110 are attached to a base 120. The U-shaped bulbs 110 are in a circular arrangement. The reflectors 150 are hyperbolic, and paired together to individually reflect light from each arm of the U-shaped bulbs 110. This arrangement increases the light reflected outward. Fig. 2 shows four U-shaped bulbs, however any number of bulbs 110 greater than one may be used according to the invention.

[0017] Figure 2B is a pictorial representation of a top view of a circular arrangement of U-shape bulbs 110 with a series of parabolic mirrored reflectors 160 according to an embodiment of the present invention. Again, the U-shaped bulbs 110 may be compact fluorescent bulbs or any other type of lamp designed in a compact configuration and are attached to a base 120 in a circular arrangement. In this embodiment, however, the reflectors 160 are parabolic, and paired together to individually reflect light from each arm of the U-shaped bulbs 110. This arrangement increases the light reflected outward. Any number of bulbs 110 greater than one may be used according to the invention.

[0018] Fig. 3 is a pictorial representation of a top view of a circular arrangement of bulbs 210 with parabolic mirrored reflectors 250 according to an embodiment of the present invention. The reflectors 250 may be light

pipes or other reflecting techniques known by those skilled in the art. In this exemplary embodiment, the U-shaped bulbs 210 may be compact florescent bulbs or any other type of lamp designed in a compact configuration of multiple light sources from one or more lamps. In this embodiment, the U-shaped bulbs 210 are attached to a base 220. The U-shaped bulbs 110 are in a circular arrangement. The reflectors 250 are parabolic, and arranged so that each end of each reflector 250 is near the point on the inner side of bulbs 210 that faces the center of the circular arrangement of bulbs. This arrangement increases the light reflected outward. For example, each reflector 250, according to this embodiment reflects approximately half the light from each of two of the bulbs 210. Fig. 3 shows four U-shaped bulbs 210, however any number of bulbs greater than one may be used according to the invention.

[0019] Reflective materials in various shapes, from a simple cylinder to multiple parabolic shapes may be employed to increase the efficiency of gas discharge lamps. In the above examples, compact fluorescent lamps have been shown, but any gas discharge light source may be used, as will be appreciated by those having skill in this art.

[0020] In addition to reflectors, "light pipes" may be employed as well from the back of each light collecting light and bringing it out between the lamps. Light pipes can be in vertical strips or of any shape to effect the desired result. For example, as shown in Fig. 4, according to an aspect of the invention, light pipes 50 are used to gather light at a rear portion of the bulbs and to carry light to the outward from the lamp. In Fig. 4, the lamp includes more than one bulb positioned such that there is a middle region inside the group of bulbs. One end 60 of the light pipe or pipes 50 is positioned to receive light from the portion of a bulb that is facing toward the middle region of a group of bulbs. The other end 70 of the pipe or pipes 50 is position so that the light coming out of that end of the pipe is directed outside of the group of bulbs. In the embodiment illustrated, the light pipes 50 split the light from the rear of one prong of the U-shaped lamp into two paths that lead the light out of the lamp system on either side of the one prong of lamp. This can be accomplished with one light pipe as well. Other arrangements that guide

light from the inside to the outside of the lamps may be used in accordance with the invention.

[0021] The light pipe 50 may be formed of a solid piece of molded glass or may be a bundle of smaller fibers. The material of the pipe may be glass or plastic. Those skilled in the art will know of other materials suitable to carry light in accordance with the present invention. The material may also be solid or semi-flexible. A flexible material may be used that becomes solid or more solid with the application of heat or over a period of time. The pipe may be linear or curvilinear. In this particular embodiment the light pipe is molded to fit the curvature of the tube. The light pipe may also be coated with a metalized layer to reflect light within the pipe and guide the light from one end to the other end of the pipe. The lamp may be U-shaped. The lamp may also be spiral shaped or other geometric shape that is desired.

[0022] It will be appreciated by those of ordinary skill in the art that the invention can be embodied in various specific forms without departing from its essential characteristics. The disclosed embodiments are considered in all respects to be illustrative and not restrictive. The scope of the invention is indicated by the appended claims, rather than the foregoing description, and all changes that come within the meaning and range of equivalents thereof are intended to be embraced thereby.

[0023] It should be emphasized that the terms "comprises", "comprising", "includes", and "including", when used in this description and claims, are taken to specify the presence of stated features, steps, or components, but the use of these terms does not preclude the presence or addition of one or more other features, steps, components, or groups thereof.

WHAT IS CLAIMED IS:

1. A gas discharge lamp, comprising:
a plurality of gas discharge bulbs arranged on a base along a
perimeter defining a middle region; and
at least one reflective mirror positioned in the middle region and
operative to reflect light outward from the middle region.
2. The gas discharge lamp of claim 1, wherein the bulbs are
arranged in a circular perimeter.
3. The gas discharge lamp of claim 1, wherein the bulbs are U-
shaped.
4. The gas discharge lamp of claim 1, wherein the at least one
reflective mirror is a circular mirror.
5. The gas discharge lamp of claim 1, wherein the at least one
reflective mirror is hyperbolic in shape.
6. The gas discharge lamp of claim 4, wherein hyperbolic mirrored
reflectors are paired together to individually reflect light from each arm of U-
shaped bulbs.
7. The gas discharge lamp of claim 1, wherein the at least one
reflective mirror is parabolic in shape.
8. The gas discharge lamp of claim 7, wherein parabolic mirrored
reflectors are paired together to individually reflect light from each arm of U-
shaped bulbs.

9. The gas discharge lamp of claim 6, wherein each end of each parabolic mirrored reflector is near a point on an inner side of a respective bulb that is closest to the center of the circular arrangement of bulbs.

10. A gas discharge lamp, comprising:
a plurality of gas discharge bulbs arranged on a base along a perimeter defining a middle region; and
at least one light pipe positioned in the middle region and configured to gather light and redirect the light outward from the middle region.

11. The gas discharge lamp of claim 10, wherein the at least one light pipe is formed of a bundle of smaller fibers.

12. The gas discharge lamp of claim 10, wherein the bulbs are U-shaped and the at least one light pipe is arranged to gather light from a rear of one prong of a U-shaped bulb and redirect the light out of the lamp.

13. The gas discharge lamp of claim 10, wherein the at least one light pipe is coated with a metalized layer to reflect light within the pipe and guide the light from one end to another end of the pipe.

14. The gas discharge lamp of claim 10, wherein the bulbs are arranged in a circular perimeter.

15. The gas discharge lamp of claim 10, wherein the bulbs are U-shaped.

ABSTRACT

A gas discharge lamp includes a plurality of gas discharge bulbs arranged on a base along a perimeter defining a middle region and at least one reflective mirror positioned in the middle region and operative to reflect light outward from the middle region. Alternatively, at least one light pipe can be positioned in the middle region and configured to gather light and redirect the light outward from the middle region.

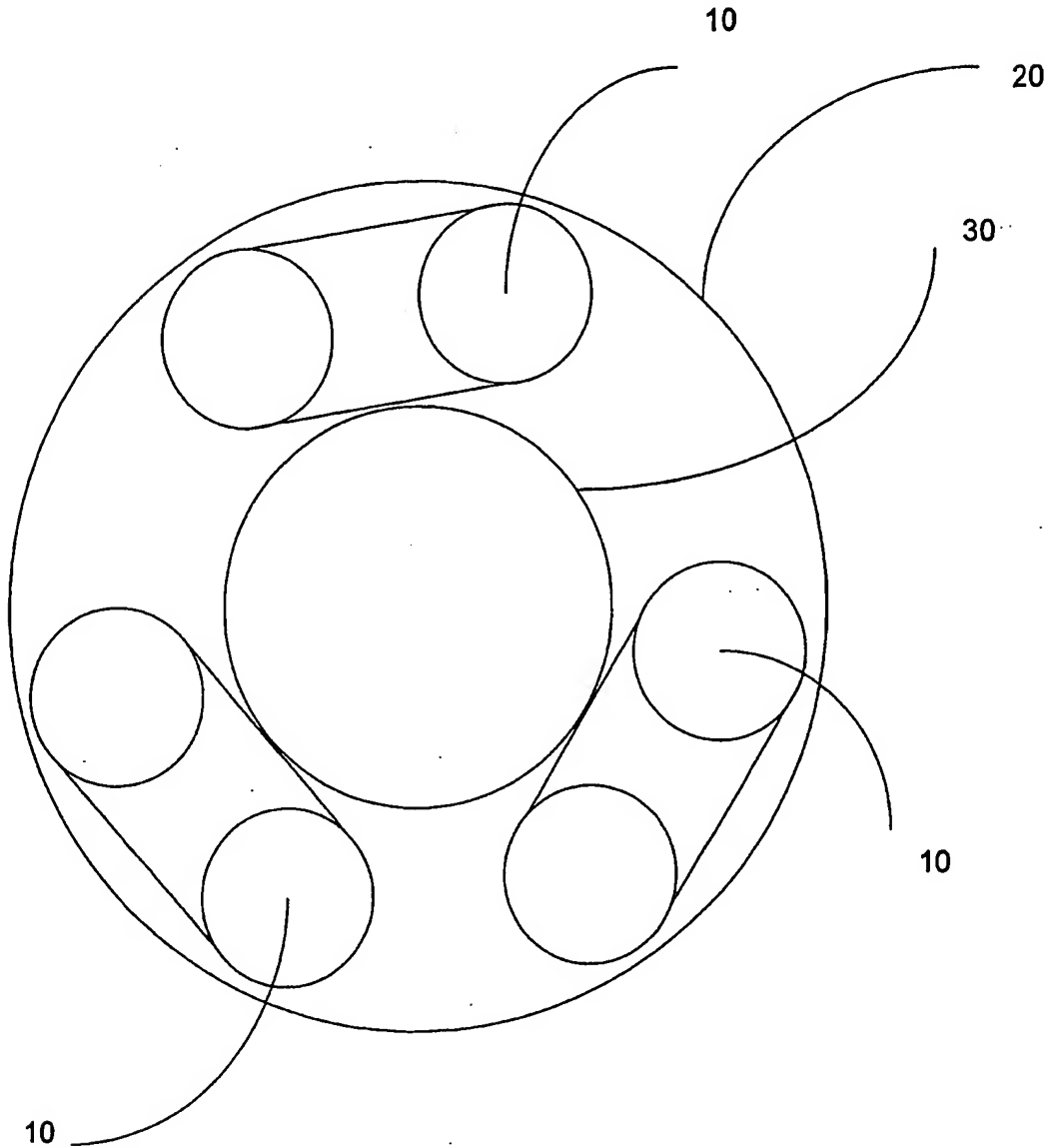


Fig. 1



APPLN. FILING DATE: APRIL 4, 2003
TITLE: FLUORESCENT LAMP SYSTEM USING REFLECTORS
INVENTOR(S): CRANDALL, EARL F.
APPLN. SERIAL NO.: 60/460,379

SHEET 2 OF 5

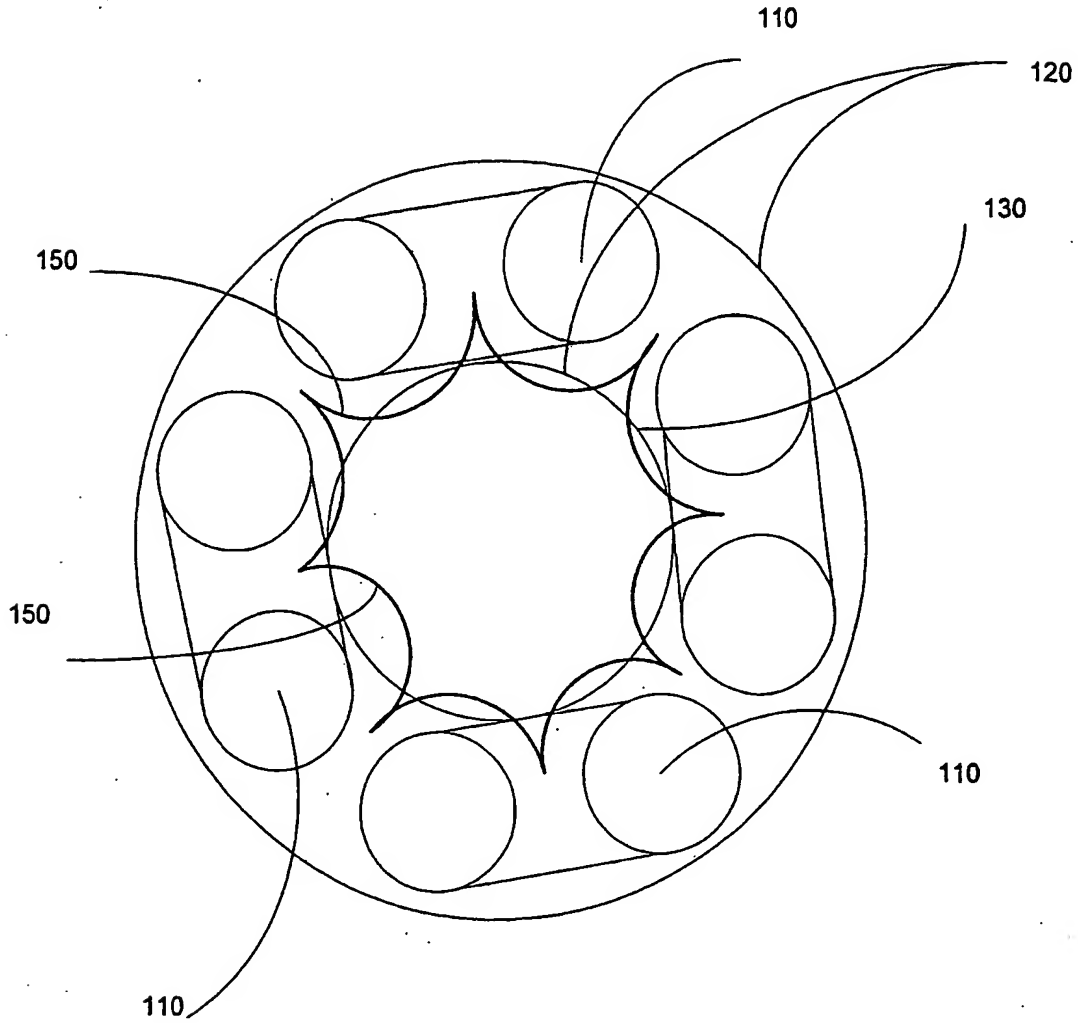


Fig. 2A

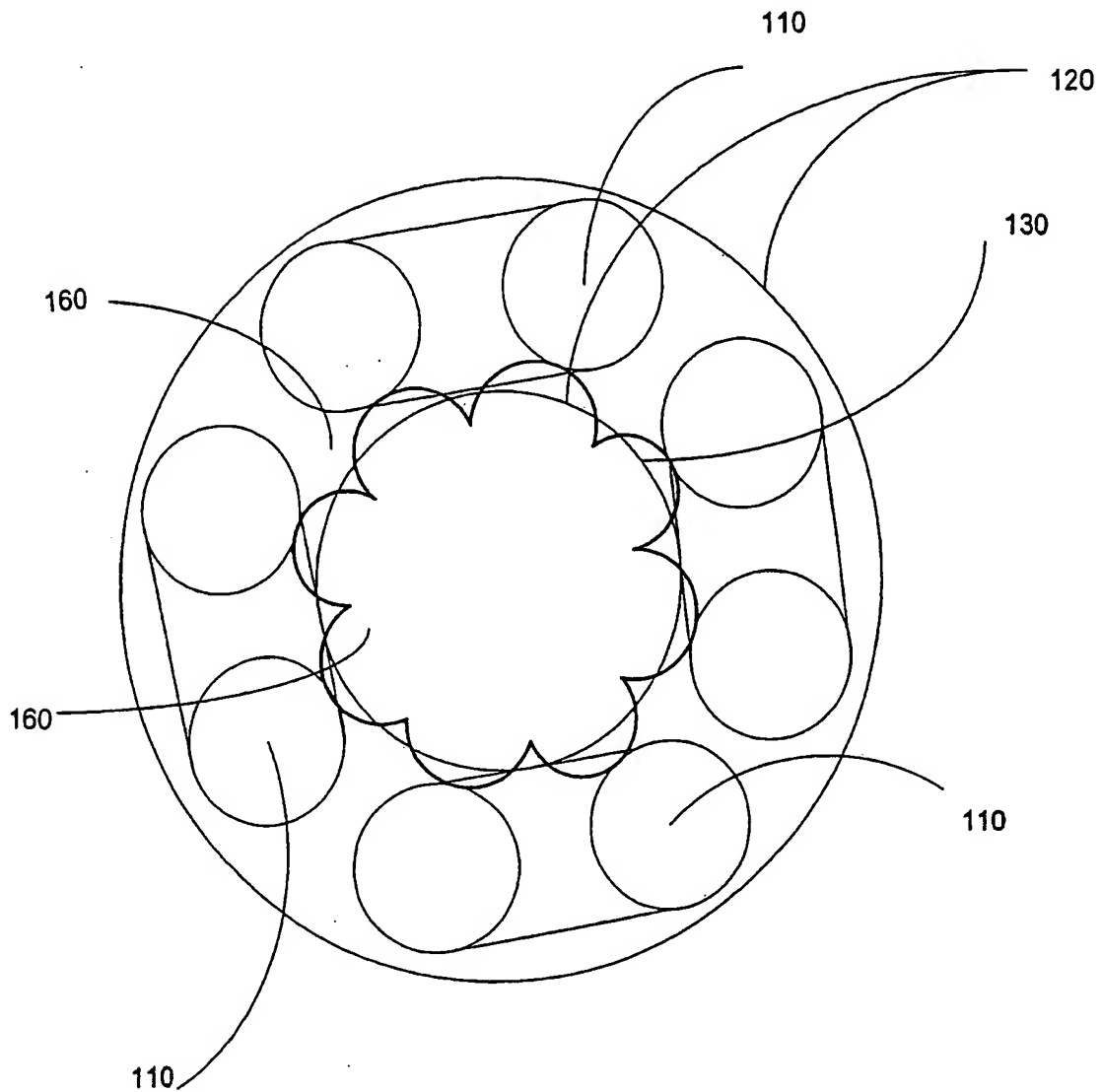


Fig. 2B

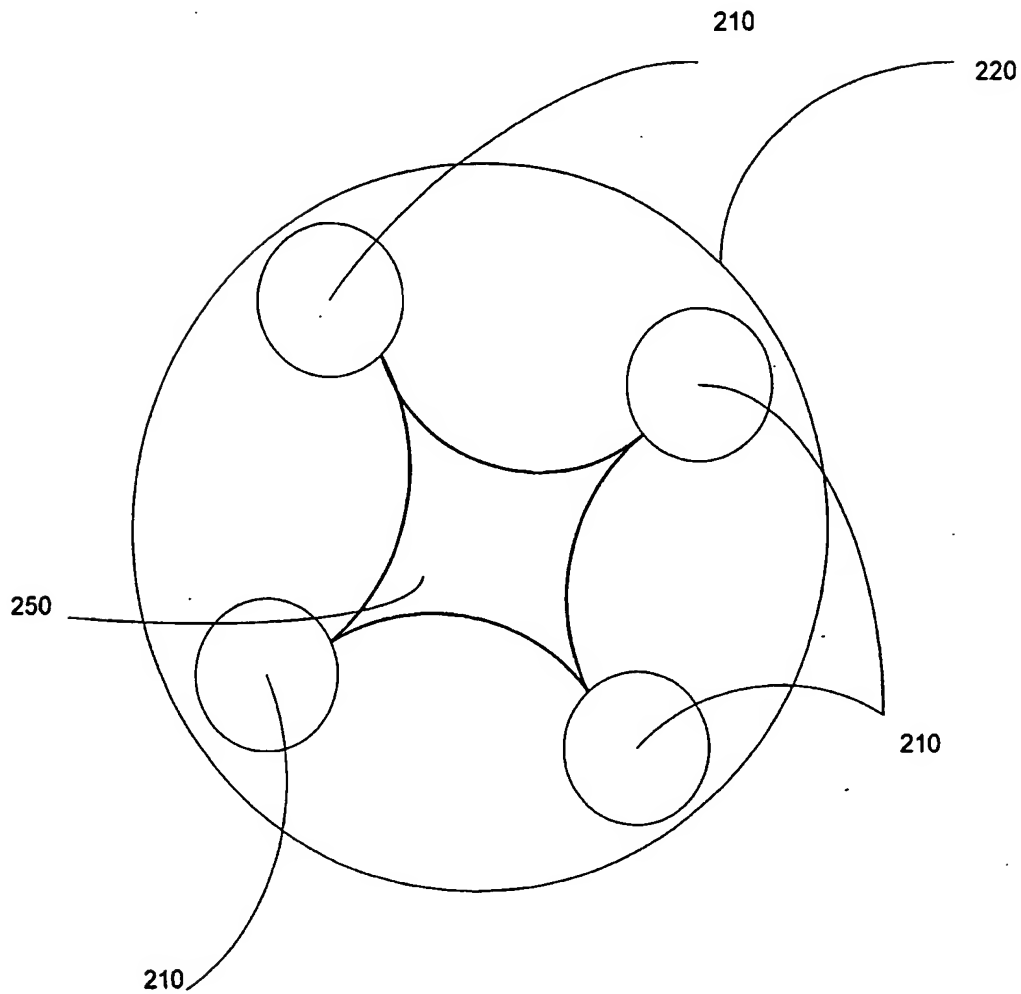


Fig. 3

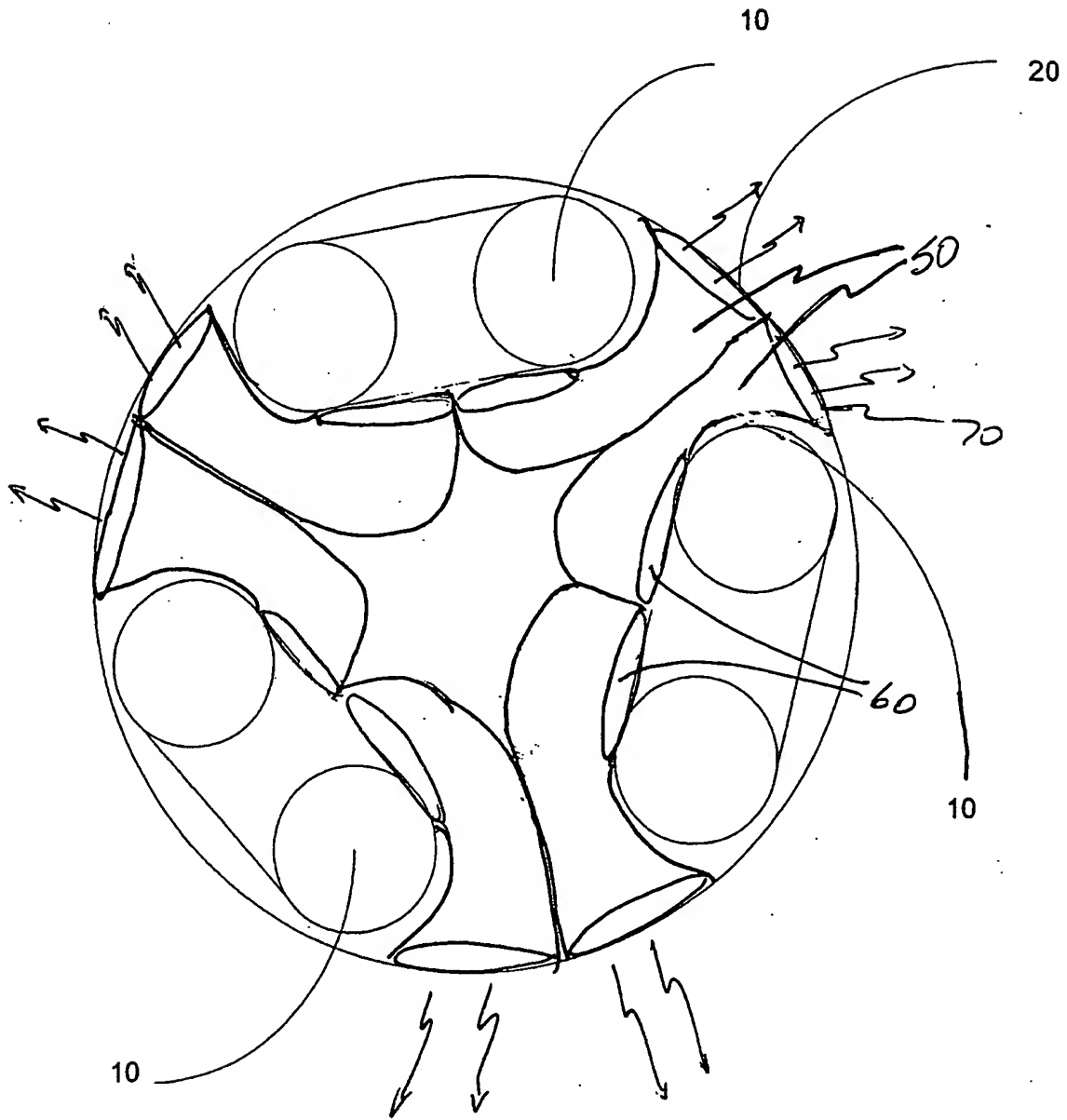
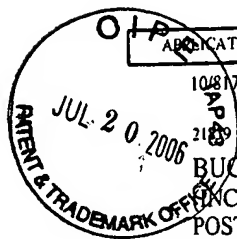


Fig. 4



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
104817,057	04/02/2004	Earl F. Crandall	033859-009	2666

21839 7590 05/30/2006

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EXAMINER

SHALLENBERGER, JULIE A

ART UNIT	PAPER NUMBER
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2875

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



Notice of Abandonment

Application No.

10/817,057

Examiner

Julie A. Shallenberger

Applicant(s)

CRANDALL, EARL F.

Art Unit

2875

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address-

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 01 November 2005.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☒ The reason(s) below:

Attempts to reach the attorney of record were unsuccessful.


RENEE LUEBKE
PRIMARY EXAMINER

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.